Remarks

In response to the Office action mail-dated 18 February 2003, reconsideration of the application, as amended, is respectfully requested.

By the instant response: claims 1, 2, 4-6, 8, 11, 14, 17, 22 and 24 are amended; claim 27 is added. Claims 1-27 are now in the application, wherein claims 1, 8, 14, 22 and 24 remain the independent claims.

Applicant's response to the Office action includes this **Amendment** and the accompanying **Fee Authorization**, which charges $102.00 ($84.00 for one additional independent claim, plus $18.00 for one additional total claim), and any other required fees (if any), to Deposit Account 50-0958.

Following the instant remarks is the marked-up version of changes made in the application.

Preliminarily, it is respectfully pointed out that a Notice of Draftsperson's Patent Drawing Review (PTO-948) is not attached to the Office action. Applicant is respectfully proceeding on the assumption that the Office finds the drawings as originally filed on 10/04/01 to be formally acceptable.

Objection to Abstract

Based on MPEP 608.01(b), the Office action objects to the abstract ''because the abstract exceeds 150 words.'' Applicant respectfully requests withdrawal of the objection to the

abstract. Applicant would appreciate a ''re-count" by the Office. Applicant counts fewer than 150 words in the abstract. In fact, Microsoft Word counts 138 words (including the heading ''ABSTRACT'').

Objections to Claims

In claims 2 and 4, Applicant has adopted the Office's suggested cures for the informalities perceived by the Office. Applicant therefore respectfully requests withdrawal of the objections to the claims. With all due respect to the Office, however, Applicant respectfully questions whether the Office's suggested re-wordings of certain phrases are necessary or even constitute improvements.

Rejections under 35 U.S.C. 112, Second Paragraph

Claims 1-7, 14-21 and 24-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is respectfully urged that, by amendment herein, Applicant has corrected all of the indefiniteness problems noted by the Office. The claims, as amendedly presented herein, are believed to be devoid of indefiniteness problems. Applicant respectfully requests withdrawal of the rejection under 35 U.S.C. 112, second paragraph.

Rejections under 35 U.S.C. 102(b) and 35 U.S.C. 103(a)

The following art rejections are rendered by the Office action:

> Claims 1-6, 8-12, 14 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Su U.S. Patent 5,899,443 (hereinafter, ''Su '443'').
>
> Claims 7, 13, 15, 16, 18, 19 and 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Su '443.
>
> Claims 14, 22 and 24 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 12 and 18 of Su '443.

In view of the claim amendments herein, Applicant respectfully requests withdrawal of the rejections under 35 U.S.C. 102(b), 35 U.S.C. 103(a) and the judicially created obviousness-type double patenting doctrine.

The Office is, of course, well acquainted with the law pertaining to 35 U.S.C. 102; nevertheless, Applicant begs the Office's indulgence as Applicant sets forth the following well settled principles: A claimed invention is anticipated by a reference under 35 U.S.C. 102 when it is, in the words of 35 U.S.C. 103(a), "identically disclosed or described" by that reference. "Invalidity for anticipation requires that all of the

limitations of the claim are found within a single prior art reference.... There must be no difference between the claimed invention and the reference disclosure, as viewed by a person of ordinary skill in the field of the invention." *Scripps Clinic & Research Foundation v. Genentech, Inc.*, 18 USPQ2d 1001, 1010, 18 USPQ2d 1896 (Fed. Cir. 1991). "For a prior art reference to anticipate in terms of 35 U.S.C. Sec. 102, every element of the claimed invention must be identically shown in a single reference...." *In re Bond*, 15 USPQ 2d 1566, 1567 (Fed. Cir. 1990). ''[A]nticipation under section 102 can be found only when the reference discloses exactly what is claimed.... [W]here there are differences between the reference disclosure and the claim, the rejection must be based on section 103 which takes differences into account." *Titanium Metals Corp. v. Banner*, 227 USPQ 773, 777 (Fed. Cir. 1985), citing D. Chisum, *Patents*, sec. 3.02. "The Court of Appeals for the Federal Circuit has determined that if the general aspects are the same and the differences in minor matters are only such as would suggest itself to one of ordinary skill in the art, a prior art disclosure that 'almost' meets the standard may render the claim invalid under Section 103, but does not 'anticipate' the claimed invention under Section 102." *Pacific Technica Corp. v. U.S.*, 3 USPQ2d 1168, 1178 (Cl. Ct. 1986). "Anticipation cannot be predicated on teachings in a reference that are vague or based on conjecture." *Datascope Corp. v. SMEC, Inc.*, 224 USPQ 694, 698 (D.N.J. 1984), affirmed in part & reversed in part 227 USPQ 838 (Fed. Cir. 1985).

In consideration of the standard for anticipation under 35 U.S.C. 102, Applicant respectfully disputes the merit of the section 102 rejection as to Applicant's *originally* claimed invention, as defined by Applicant's original independent claims and the claims dependent therefrom. In particular, Su '443 does not disclose Applicant's ''streamlined resilient element'' as originally recited. For similar reasons, Applicant respectfully disputes the merit of the section 103 rejection.

Nevertheless, Applicant herein amends independent claims 1, 8, 14, 22 and 24 so as to more definitively distinguish Applicant's claimed invention from Su '443.

Su' 443 neither teaches nor suggests, *inter alia*, the following features that are disclosed by Applicant and that now are essentially (albeit variously) claimed by Applicant in independent claims 1, 8, 14, 22 and 24: a solid elastomeric streamlined resilient element describing a curved profile in a third geometric plane perpendicularly intersecting a first geometric plane defined by the upper member and a second geometric plane defined by the lower member, each streamlined resilient element being characterized by nonlinear deflection when subjected to an amount of loading within a given range of loading, each streamlined resilient element effecting passive reduction of vibration at a given range of vibration frequency within the given range of loading regardless of the degree of loading within the range to which the streamlined resilient element is subjected.

Support for claim amendments herein may be found in Applicant's specification, e.g., at: page 10, lines 184-200; page 12, lines 229-239; page 13, lines 252-256; page 13, line 265 to page 14, line 270; page 15, lines 287-294; page 18, lines 364-367.

The shape of Applicant's resilient element is not a mere matter of design choice. Both the shape and the resiliency of Applicant's claimed "streamlined resilient element" are crucial aspects of the "constant natural frequency" functionality of Applicant's claimed invention. The criticality to Applicant's claimed invention of the shape of Applicant's claimed "streamlined resilient element" is manifest in Applicant's disclosure. Su '443 does not disclose a "streamlined resilient element." There is no motivation in Su '443 to modify his resilient element so as to be a "streamlined resilient element" as disclosed and claimed by Applicant. Nor would the ordinarily skilled artisan who reads Su '443 be motivated to do so.

Claim 17, originally dependent from independent claim 14, is amended herein to be an independent claim 17 that includes all of the limitations of the base claim and intervening claims. Thus, claim 17 includes all of the limitations of original claim 14 and original claim 17. The indefiniteness in claim 14, asserted by the Office, has been corrected by reciting ''PID-type" in lieu of ''PID'' (which the Examiner considers to be less definite) in both occurrences. Amended claim 17 is respectfully urged to be allowable, since amended claim 17 is free of indefiniteness and is not otherwise rejected by the Office.

In view of the foregoing, Applicant respectfully requests allowance of claims 1-27 as amendedly and newly presented herein.

The Examiner should please feel free to contact the undersigned at telephone number (301) 227-1834 to discuss any questions concerning this matter.

Respectfully submitted,

Howard Kaiser 05/16/03

HOWARD KAISER date
Reg. No. 31,381
ATTORNEY FOR APPLICANT

Office of Counsel (Patents), Code 39
Naval Surface Warfare Center, Carderock Division
9500 MacArthur Boulevard, West Bethesda, Maryland 20817-5700
phone (301) 227-1834 fax (301) 227-1968
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Version with Markings to Show Changes Made

IN THE CLAIMS

Claims 1, 2, 4, 5, 6, 8, 11, 14, 17, 22 and 24 are amended, as follows:

1. (Amended) A mount suitable for passive-active vibration isolation in association with variable loading, said mount comprising a first member for attaching to a first entity, a second member for attaching to a second entity, at least one streamlined resilient member, and at least one structurally-positionally and functionally-directionally collocational combination of a sensor and an actuator; each said streamlined resilient element at least substantially consisting of an at least substantially solid elastomeric material and being interposed between said first member and said second member; said first member approximately describing a first geometric plane; said second member approximately describing a second geometric plane which is approximately parallel to said first geometric plane; each said streamlined resilient element at least substantially describing a curved profile in a third geometric plane which perpendicularly intersects said first plane geometric plane and said second geometric plane; each said streamlined resilient element being characterized by low dynamic load transmissibility of vibration in approximately a single [the same] frequency bandwidth over a broad [loading] range of loading to which said streamlined resilient element is being subjected; each said streamlined resilient element being characterized by nonlinear deflection when subjected to said loading; each said streamlined resilient element being predisposed to passively reducing vibration at said

single frequency bandwith regardless of the extent of said loading, within said range, to which said streamlined resilient element is being subjected; said at least one streamlined resilient element thereby being capable of effectuating overall passive reduction of the transmission of vibration from said first member to said second member; said overall passive reduction being of vibration in approximately a [the same] first said single frequency bandwidth over a broad loading range of said first entity; each said collocational combination having a corresponding region of said second member, said corresponding region corresponding to said collocational combination; each said collocational combination being capable of generating a sensor signal and an actuator vibratory force; said sensor signal being representative of the local vibration in the corresponding region and being representable as a control signal; said vibratory force being representative of said control signal; each said collocational combination thereby being capable of effectuating, in the corresponding region, localized active reduction of the transmission of local vibration which has reached said second member subsequent to the effectuating of said overall passive reduction; said localized active reduction being of vibration in a non-first said single frequency bandwidth which differs from said first frequency bandwidth.

2. (Amended) A mount as recited in claim 1, wherein at least one of said at least one streamlined resilient element includes at least one truncation surface, each of said at least one truncation surface adjoining one of said first member and said second member.

4. (Amended) A mount as recited in claim 3, wherein at least one of said at least one streamlined resilient element includes at least one truncation surface, each of said at least one truncation surface adjoining one of said first member and said second member.

5. (Amended) A mount as recited in claim 4, wherein:

[said first member approximately describes a first plane;

said second member approximately describes a second plane which is approximately parallel to said first plane;]

a [if] said streamlined resilient element that at least substantially describes a cylinder shape[, said streamlined resilient element] approximately defines a longitudinal axis which is approximately parallel to said first plane and said second plane;

a [if] said streamlined resilient element that at least substantially describes a torus shape[, said streamlined resilient element] approximately defines a longitudinal axis which lies in a third plane which is approximately parallel to said first plane and said second plane; and

a [if] said streamlined resilient element that at least substantially describes a torus segment shape[, said streamlined resilient element] approximately defines a longitudinal axis which lies in a third plane which is approximately parallel to said first plane and said second plane.

6. (Amended) A mount as recited in claim 3, wherein:

[said first member approximately describes a first plane;

said second member approximately describes a second plane which is approximately parallel to said first plane;]

a [if] said streamlined resilient element that at least substantially describes a cylinder shape[, said streamlined resilient element] approximately defines a longitudinal axis which is approximately parallel to said first plane and said second plane;

a [if] said streamlined resilient element that at least substantially describes a torus shape[, said streamlined resilient element] approximately defines a longitudinal axis which lies in a third plane which is approximately parallel to said first plane and said second plane; and

a [if] said streamlined resilient element that at least substantially describes a torus segment shape[, said streamlined resilient element] approximately defines a longitudinal axis which lies in a third plane which is approximately parallel to said first plane and said second plane.

8. (Amended) A vibration isolator which is adapted for engagement with a processor/controller, said processor/controller being capable of generating a control signal, said vibration isolator comprising:

a spring assembly which includes a top member for securing said spring assembly with respect to an isolated entity, a bottom member for securing said spring assembly with respect to an isolatee entity, and at least one interposed streamlined resilient member, each said streamlined resilient member being at least substantially solid and at least substantially composed of an elastomeric material, said top member approximately describing a first imaginary plane; said bottom member approximately describing a second imaginary plane which is approximately parallel to said first imaginary plane; each said streamlined resilient element at least substantially describing a curved profile in a third imaginary plane which perpendicularly intersects said first imaginary plane and said second imaginary plane; each said streamlined resilient member having the property of passively reducing vibration within a special passive-reduction-related frequency bandwidth which is at least substantially constant when said streamlined resilient member is subjected to a wide range in terms of the degree of loading, each

~~said streamlined resilient element having the property of nonlinear deflection when subjected to a degree of said loading within said wide range; each said streamlined resilient element passively reducing vibration at least substantially within said special passive-reduction-related frequency bandwith regardless of the degree of said loading within said wide range,~~ at least one streamlined resilient member thereby being capable in net effect of passively reducing vibration within a general passive-reduction-related frequency bandwidth which is at least substantially constant when said streamlined resilient member is subjected to a wide range in terms of the degree of loading which is associated with at least one of said isolated entity and said isolatee entity;

at least one sensor, each said sensor being coupled with said bottom member and being capable of generating a sensor signal which is in accordance with the vibration in a local zone of interest in said bottom member; and

at least one actuator, each said actuator being coupled with said bottom member and being collocationally paired with one said sensor so as to share approximate coincidence with respect to both physical situation and operational direction, each said actuator being capable of generating, in said local zone of interest of said sensor with which said actuator is collocationally paired, a vibratory force which is in accordance with said control signal, wherein said control signal is in accordance with said sensor signal which is generated by said sensor with which said actuator is collocationally paired, wherein said vibratory force has the tendency of actively reducing vibration within an active-reduction-related frequency bandwidth which differs from said general passive-reduction-related bandwidth.

11. (Amended) A vibration isolator as defined in claim 8, wherein:

to at least a substantial degree, each said streamlined resilient element has a shape which is selected from the group consisting of spherical, prolate spheroidal, cylindrical, toroidal and segmentedly toroidal;

[said top member has a top member bottom surface which approximately defines an upper plane;

said bottom member has a bottom member top surface which approximately defines a lower plane which is approximately parallel to said upper plane;]

[if] said [shape is] cylindrical[, said]streamlined resilient element approximately defines an imaginary central axis which is approximately intermediate and approximately parallel to said upper plane and said lower plane;

[if] said [shape is] toroidal[, said] streamlined resilient element approximately defines an imaginary central axis which lies in a third plane which is approximately intermediate and approximately parallel to said first plane and said second plane; and

[if] said [shape is] segmentedly toroidal[, said] streamlined resilient element approximately defines an imaginary central axis which lies in a third plane which is approximately intermediate and approximately parallel to said first plane and said second plane.

14. (Amended) A vibration isolation system; said vibration isolation system being for reducing the transmission of vibration of a first entity to a second entity; said vibration isolation system comprising a spring assembly and a feedback loop system; said spring assembly being for effectuating global passive vibration control; said feedback loop system being for effectuating localized active vibration control subsequent to said effectuating of said global passive vibration control; said spring assembly including a first securement member, a second

securement member and at least one interposed streamlined resilient element; said first securement member being for securing said spring assembly with respect to said first entity; said second securement member being for securing said spring assembly with respect to said second entity; each of said at least one streamlined resilient member being essentially solid and essentially elastomeric; each of said at least one streamlined resilient element passively reducing the transmission of vibration of said first entity to said second entity; each of said at least one streamlined resilient element being characterized by nonlinear deflection when subjected to loading; said first securement member approximately describing a first geometric plane; said second second member approximately describing a second geometric plane which is approximately parallel to said first geometric plane; each of said at least one streamlined resilient element at least substantially describing a curved profile in a third geometric plane which perpendicularly intersects said first geometric plane and said second geometric plane; said passively reduced vibration existing in at least a first frequency bandwidth; said first frequency bandwidth being generally constant within a broad scope of the amount of loading upon said at least one streamlined resilient element by at least one of said first entity and said second entity; said at least one streamlined resilient element passively reducing vibration in said at least a first frequency bandwith regardless of the amount of loading upon said at least one streamlined element within said broad scope of the amount of loading; said feedback loop system including at least one sensor, a PID [PID-type] controller and at least one actuator; said at least one sensor being coupled with said second securement member; each said sensor generating a sensor signal which is a function of the vibration in a localized control area of said second securement member; said PID [PID-type] controller generating at least one control signal which is a function of said at least one sensor signal; said at least one actuator being coupled with said second

securement member; each said actuator generating, in said localized control area, a vibratory force which is a function of a said control signal; said at least one actuator, by said generating, reducing the transmission of vibration of said first entity to said second entity; said vibration existing in at least a second frequency bandwidth; said at least a first frequency bandwidth and said at least a second frequency bandwidth being generally dissimilar; said at least one sensor and said at least one actuator being collocated whereby each said sensor and one said actuator are approximately coincident and whereby the sensing of each said sensor and the actuation of the corresponding said actuator are approximately in the same direction.

17. (Amended) A [The] vibration isolation system; said vibration isolation system being for reducing the transmission of vibration of a first entity to a second entity; said vibration isolation system comprising a spring assembly and a feedback loop system; said spring assembly being for effectuating global passive vibration control; said feedback loop system being for effectuating localized active vibration control subsequent to said effectuating of said global passive vibration control; said spring assembly including a first securement member, a second securement member and at least one interposed streamlined resilient element; said first securement member being for securing said spring assembly with respect to said first entity; said second securement member being for securing said spring assembly with respect to said second entity; said at least one streamlined resilient member being essentially elastomeric; [according to claim 14, wherein] at least one said streamlined resilient element at least substantially defining [defines] a cylindrical shape; said at least one streamlined resilient element passively reducing the transmission of vibration of said first entity to said second entity; said passively reduced vibration existing in at least a first frequency bandwidth; said first frequency bandwidth being

generally constant within a broad scope of the amount of loading upon said at least one streamlined resilient element by at least one of said first entity and said second entity; said feedback loop system including at least one sensor, a PID controller and at least one actuator; said at least one sensor being coupled with said second securement member; each said sensor generating a sensor signal which is a function of the vibration in a localized control area of said second securement member; said PID controller generating at least one control signal which is a function of said at least one sensor signal; said at least one actuator being coupled with said second securement member; each said actuator generating, in said localized control area, a vibratory force which is a function of a said control signal; said at least one actuator, by said generating, reducing the transmission of vibration of said first entity to said second entity; said vibration existing in at least a second frequency bandwidth; said at least a first frequency bandwidth and said at least a second frequency bandwidth being generally dissimilar; said at least one sensor and said at least one actuator being collocated whereby each said sensor and one said actuator are approximately coincident and whereby the sensing of each said sensor and the actuation of the corresponding said actuator are approximately in the same direction.

22. (Amended) Apparatus for both passively and actively isolating the vibration of a structure situated over a foundation, said apparatus comprising:

a processor/controller;

a spring device which passively reduces the transmission of said vibration from said structure to said foundation, said spring device including an upper member for fixing said spring device with respect to said structure, a lower member for fixing said spring device with respect to said foundation, and at least one streamlined resilient element, wherein:

each said streamlined resilient element is solid and elastomeric and is so configured as to at least substantially exhibit the attribute of effecting passive reduction of the vibration existing at least nearly the identical frequency band over a significant range of the degree of loading imposed upon said streamlined resilient element;

each said streamlined resilient element has a configuration describing a curved profile in a third geometric plane which perpendicularly intersects a first geometric plane defined by said upper member and a second geometric plane defined by said lower member;

said significant range is between a minimum degree of loading and a maximum degree of loading;

each said streamlined resilient element is characterized by nonlinear deflection when a degree of said loading within said significant range is imposed upon said streamlined resilient element;

each said streamlined resilient element effects passive reduction of vibration at least substantially within said significant range regardless of the degree of said loading, within said wide range, imposed upon said streamlined resilient element;

said maximum degree of loading is no less than about ten times said minimum degree of loading;

said maximum degree of loading is no more than about one hundred times said minimum degree of loading; and

said streamlined resilient element is so configured as to at least substantially describe one of a sphere, a prolate spheroid, a cylinder, a torus and a torus segment; and at least one collocation of a sensor and an actuator wherein, for each said collocation:

said sensor and said actuator are each coupled with said lower member so as to be approximately identically located and approximately identically directed;

said sensor senses the local vibration in a portion of said lower member and produces an electrical sensor signal commensurate with said local vibration;

said processor/controller receives said electrical sensor signal from said sensor and produces an electrical control signal commensurate with said electrical sensor signal; and

said actuator receives said electrical control signal from said processor/controller and produces in said portion of said lower member a vibratory force commensurate with said electrical control signal, said vibratory force increasing the stability of said portion of said lower member, said actuator thereby effecting active reduction of the transmission of said vibration from said structure to said foundation whereby, in succession, said spring device passively reduces the transmission of said vibration and said actuator actively reduces the transmission of said vibration.

24. (Amended) A method for reducing transmission of vibration of a first entity to a second entity, said method comprising:

providing a spring assembly which includes at least one streamlined resilient member, an upper securement member and a lower securement member, said at least one streamlined resilient member being essentially solid and essentially elastomeric and being for passively reducing the transmission of vibration existing in at least a first plurality of frequencies, said first plurality of frequencies falling within a generally constant bandwidth in relation to a range of loading imposed upon said at least one streamlined resilient element by at least one of said first

entity and said second entity, said range being between a minimum degree of loading and a maximum degree of loading, ~~said upper securement member approximately describing a first geometric plane; said lower securement member approximately describing a second geometric plane, said first geometric plane and said second geometric plane being approximately parallel, each of said at least one streamlined resilient element being shaped so as to at least substantially describe a curved profile in a third geometric plane which perpendicularly intersects said first geometric plane and said second geometric plane, each said streamlined resilient element being characterized by nonlinear deflection when a degree of loading within said range is imposed upon said streamlined resilient element, each said streamlined resilient element effecting passive reduction of vibration at least substantially within said range regardless of the degree of loading within said range imposed upon said streamlined resilient element;~~ said maximum degree of loading being no less than about ten times said minimum degree of loading, said maximum degree of loading being no more than about one hundred times said minimum degree of loading, each said streamlined resilient element being shaped so as to at least substantially describe one of a sphere, a prolate spheroid, a cylinder, a torus and a torus segment; and

engaging with said spring assembly a feedback loop system, said engaging including:

establishing at least one collocation of a [said] sensor with a corresponding [said] vibratory actuator so that said sensor and said corresponding said vibratory actuator are each coupled with said lower securement member at approximately the same location, and so that said sensor senses and said corresponding said vibratory actuator actuates in approximately the same direction and in approximately the same locality of said lower securement member;

connecting each said sensor and each said vibratory actuator with a

processor/controller so that, for each said collocation, said sensor generates a sensor signal representative of the vibration of said locality, said processor-controller generates a control signal representative of said sensor signal, and said vibratory actuator generates a vibratory force representative of said control signal; and

providing power for said feedback loop system; and

mounting said first entity with respect to said second entity, said mounting including fastening said first entity with respect to said upper securement member and fastening said second entity with respect to said lower securement member;

wherein, in series, said spring assembly effects passive reduction of said vibration at said first plurality of frequencies, then said feedback loop system effects active reduction of said vibration at a second plurality of frequencies; and

wherein at least one frequency among said second plurality of frequencies is not among said first plurality of frequencies.

Claim 27 is new.